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## NEW NORTH AMERICAN TETTIGINÆ.—III.

BY ALBERT P. MORSE.

**Paratettix hesperus**, sp. nov.

Vertex narrower than eye; crown of head between eyes nearly twice as long as its middle breadth, distinctly narrowed in front; profile of face similar to that of *cucullatus*; facial costa narrowly forked but rather widely open below; eyes smaller and less protuberant. Pronotum granulose, similar in texture to that of *cucullatus*, but with the humeral angles less pronounced, giving a narrower and more convex appearance to the shoulders; the hind process passes the hind femora from 2.5 to 4 mm., and the wings pass the process 1 to 2 mm. Tegmina narrow, acuminate at apex. Fore and middle femora rather slender with upper margin convex, lower margin nearly straight but slightly sinuate at distal third. First joint of hind tarsi slightly longer than the remaining two together; pulvilli rounded beneath, the proximal two acutely pointed at tip and together about equal in length to the third.

Color rather uniform, ranging from rufous or ash gray to black, but frequently with the hind femora and lower third of sides of pronotum pale.

Total length: ♂, 12-14; ♀, 14-16. Pronotum: ♂, 10.3-11.8; ♀, 12-14.5. Body: ♂, 7.5-9; ♀, 9-11. H. fem.: ♂, 5-6; ♀, 6-7.5 mm.

Similar to *P. cucullatus* in size and form but more nearly related to *P. aztecus*.

The types consist of 276 ♂♂ and ♀♀ taken by me at Glendale, Or., Sept. 9, 1897. I found it also at Ashland, Corvallis, Drain, and Philomath, Or., Sept. 7-15, Ahwanee, Calif., Aug. 15; I have also seen specimens from the Dalles, Or., Wickham (Bruner), Sonoma and Marin Co., Calif., Osten Sacken (S. H. Scudder), and the following from the Leland Stanford Jr. University collection: Santa Cruz Mts., Aug. 3; Palo Alto, May 10, 12, Aug. 3; Mt. Hamilton, May 13, 14—in all 303 adults. Nymphs were common at Glendale on Sept. 9.

This species appears to be locally plentiful on the stony margins of rivers and streams in western Oregon and the Transition Zone of at least the northern part of California.

**Paratettix toltecus extensus**, new form.

This is a dimorphic form of *P. toltecus* distinguished by the possession of fully developed wings and pronotum of normal size, and may be recognized by the characters of that species.

Total length: ♂, 11.5-13.5; ♀, 12-14.5. Pronotum: ♂, 8.7-10; ♀, 8.5-11.5. Body: ♂, 7-9; ♀, 9-11. H. fem.: ♂, 5-6; ♀, 5.5-6.5 mm. The pronotum passes the hind femora about 1 mm. and the wings pass the pronotum from 2 to 3 mm.

One ♀, Arizona (Cornell Univ.), and 18 ♂ ♂, 20 ♀ ♀, from the following localities in California: Ahwanee, Colton, Sacramento, San Bernardino, and Tulare, July 15 to Aug. 27, usually in company with typical *toltecus*.

### **Merotettix**, gen. nov.

Posterior sinus of lateral lobes of pronotum shallow, in the type the caudal margin of upper lobe about one-half as long as the ventral margin. Frontal costa of face narrowly forked, the branches straight and evenly divergent. Body relatively compressed in the type, the humeral angles very obtuse, and shoulders narrow. The type is *M. pristinus*, described below.

This genus is intermediate between *Paratettix* Bolivar and *Neotettix* Hancock. It is more nearly related to the latter in the shallowness of the posterior sinus of the lateral lobes of the pronotum and general form, but differs from it especially in the structure of the frontal costa of the face and slender form of body.

### **Merotettix pristinus**, sp. nov.

Vertex resembling that of *Paratettix rugosus* but narrower, its front margin equal in width to an eye or slightly less, somewhat convex, projecting very little in advance of the eyes, narrowly sulcate on each side of the mid-carina at its union with the frontal costa; the crown between eyes broadly and shallowly sulcate on each side of high median ridge, rapidly widening backward from the middle of the eyes. Face in profile quite retreating below antennæ, the frontal costa roundly protuberant, scarcely sinuate above; forks of the costa straight, slightly and evenly divergent.

Pronotum scabrous or rugose; disk nearly flat, slightly elevated in front of shoulders, the front margin truncate; mid-carina distinct throughout, highest and almost sub-cristate midway between front margin and shoulders, undulate behind; lateral carinæ distinct, their anterior portions converging behind; shoulders narrow and with very obtuse humeral angles; hind process with straight sides, acute, sometimes deflected apex, about reaching posterior knees. Posterior sinus of lateral lobes very shallow, the caudal margin of the upper lobe less than half as long as the ventral margin. Wings two-thirds or three-fourths as long as the pronotal process, but apparently abortive. Fore and middle femora slender with entire or slightly sinuate margins; hind femora only moderately stout, much less so than in *Neotettix*. Hind tarsi with first joint distinctly longer than succeeding ones united, pulvilli straight or rounded below, acutely pointed, the third nearly as long as the others combined.

Body: ♂, 6.5-7.5; ♀, 8-9. Pronotum: ♂, 6-7; ♀, 7.7-9. H. fem.: ♂, 4.5-5; ♀, 6 mm.

Four ♂ ♂, four ♀ ♀ (mostly in poor condition) San Domingo, M. A. Frazer (S. H. Scudder).

In the form of the vertex (except width) and facial costa and the rugosity of pronotum this species resembles *Paratettix rugosus*, but is

readily separated from it by the narrow shoulders and shallow posterior lateral sinus.

***Tettix tentatus*, sp. nov.**

Stout, with the general appearance of a large *Nomotettix*, to which genus this species and *T. acadicus* are apparently allied by the frequently shallow form of the tegminal sinus. Vertex resembling that of *T. granulatus*, more than twice the width of an eye, much advanced in front of eyes and obtuse-angled, the carina not at all or barely projecting; crown with the sides excavate opposite the anterior middle portion of eyes and slightly broadened anteriorly, rather flat, sulcate anteriorly on each side of the moderately developed carina, convex posteriorly, without occipital mammillæ. The face in profile is very similar to that of *Nom. parvus* but is less deeply excavate opposite the eyes. Pronotum rather sharply tectiform; the mid-carina high, sub-compressed, in profile convex opposite shoulders, horizontal or a little upturned posteriorly; anterior margin very obtuse-angled, nearly truncate; hind process barely or considerably passing hind femora, its sides nearly straight; wings equalling or slightly passing the pronotum.

Measurements. Total: ♂, 10.3; ♀, 11.4-14.5. Pronotum: ♂, 9.3; ♀, 10.5-12. H. fem.: ♂, 5.6; ♀, 6-6.6. Width of shoulders: ♂, 3; ♀, 3.5. Antenna: ♂, 3; ♀, 2.5-3. Pron. passes H. fem.: .3-2.5 mm.

Described from 1 ♂, 5 ♀ ♀. 1 ♀, Oregon (Scudder); 1 ♀, Laggan, Bean (Scudder); 1 ♀, Green River, Wyo., Garman (M. C. Z.); 1 ♀, Laggan, Wickham (Bruner); 1 ♂, 1 ♀, Tennessee Pass, Colo. (Bruner).

This species resembles *T. acadicus* but may be distinguished from it by the angulate (instead of toothed) vertex in dorsal view and the flatter face in profile, the frontal costa being less protuberant opposite lower part of eyes. These two species are apparently on the borderland of the genus, presenting characters allying them to *Nomotettix*. *Tentatus* was first distinguished four years ago, from three specimens; three additional specimens, representing both sexes, coming to hand, I have now no hesitation in describing it.

***Tettix hancocki*, sp. nov.**

Allied to *T. ornatus* from which it differs in its more robust form with wider and generally more projecting vertex, slightly more prominent mid-carina, in the generally more abruptly forked and wider facial costa, and notably in the enlarged middle femora; the expanded portion of the latter in the male is nearly or quite one-half as broad as long (in *ornatus* seldom more than one-third), in the female the difference is less noticeable. The humeral angles of the pronotum are more pronounced and the mid-carina is a little more elevated in its anterior portion. Dimorphism in wing- and pronotum-length occurs, the specimens (and sexes) before me (19 ♂ ♂, 27 ♀ ♀), being about equally divided between the two forms, with a few of intermediate character. For the short-winged form the trinomial *T. h. abbreviatus* may be used.

Measurements. Total: ♂, 8.3-12.4; ♀, 9-13. Pron.: ♂, 8.2-11; ♀, 8-12. H. fem.: ♂, 5-5.5; ♀, 5.5-6. Width of shoulders: ♂, 2.6-3; ♀, 2.8-3.5. Antenna: 3-3.5. In long-winged examples the pronotum and wings pass the hind femora from 3 to 4 mm.

The types consist of 14 ♂♂, 14 ♀♀, from Ames, Iowa, received from E. D. Ball, taken from April 18 to Sept. 27, chiefly in April and May. I also refer to this species specimens now before me from Montreal, from Prince Arthur, Sudbury, Toronto, DeGrassi Pt., Ont., from the North Red River, Englewood, S. D., Lincoln, Neb., Ind., and Moline, Ill. Named in honor of Dr. J. L. Hancock, in deference to his critical study of this group of locusts.

***Tettix crassus*, sp. nov.**

A variable and very perplexing form of the *ornatus* group, closely related to and seemingly intermediate between typical *ornatus*, *hancocki*, and *acadicus*. It is distinguished from *ornatus* by the more robust form with wider shoulders, wider and more projecting vertex, and less prominent eyes; it lacks the enlarged middle femora of *hancocki*, which it otherwise resembles closely; the form of the body is shorter and more depressed, the humeral angles more pronounced, the vertex less projecting, and the tegminal sinus less frequently shallow than in typical *acadicus*.

I refer to this form with some hesitation 18 ♂♂, 23 ♀♀, from Colorado, as follows: 14 ♂♂, 12 ♀♀, (Scudder), 4 ♂♂, 5 ♀♀, (Henshaw), all of Morrison's collecting; 1 ♀, Denver (Scudder), 1 ♀, Poudre Riv. (Bruner), 4 ♀♀, C. P. Gillette (Morse).

I cannot close without reiterating what I have said before, in the hope of impressing upon collectors the desirability of securing considerable series of specimens from each locality. This is a matter of the utmost importance; in fact, a necessity to the acquisition of an adequate knowledge of the group in consequence of the wide individual variability and close specific resemblance among its members. To Mr. E. D. Ball I am indebted for an opportunity to study an excellent lot of material from Iowa, including several species in considerable series, an opportunity which has enabled me to distinguish and characterize one of the species described above.